The Use of Mobile Applications Such as Duolingo to Support Self-directed English Learning

Dendeu Najla Dhiyaushshafa[1*], Otong Setiawan Djuharie[2]
[1-2] Universitas Islam Negeri Sunan Gunung Dajti, Indonesia
Email: dendeunajlaaa@gmail.com [1], otongsetiawandjuharie@uinsgd.ac.id [2]

Address: JL. AH Nasution No. 105 Cipadung, Cibiru, Kota Bandung, Jawa Barat, Indonesia
*Coresponding authori: dendeunajlaaa@gmail.com

Abstract. This study examined the role of mobile-based language learning applications, particularly Duolingo, in supporting self-directed English language learning. Using a qualitative approach through literature review, this research analyzed various academic studies published between 2018 and 2024 that focused on the effectiveness of Duolingo in improving vocabulary, grammar, and learning motivation. The results indicated that Duolingo helped learners develop consistent study habits and fostered autonomy through its gamified features. In addition, the app offered a flexible and engaging learning environment. However, limitations were found in speaking skill development and social interaction, which the application did not fully support. Overall, Duolingo serves as a useful supplementary tool in learning English, but it should be combined with other methods for more comprehensive outcomes.

Keywords: Duolingo, self-directed learning, mobile learning, English language, gamification

1. INTRODUCTION

English has become an essential skill in academic, professional, and social contexts, both globally and in Indonesia. However, many learners still face challenges in improving their English proficiency due to time constraints, financial limitations, or restricted access to formal education. In response to this issue, mobile-assisted language learning (MALL) has emerged as a flexible and accessible solution, allowing learners to study independently at their own pace using mobile devices.

One of the most widely used applications in this field is Duolingo, which offers gamified English learning content through short, interactive lessons. The app integrates features such as point rewards, progress tracking, and daily challenges to motivate users and encourage consistent learning. These elements are closely aligned with the concept of gamification in education, which refers to the use of game-like mechanics to improve learner engagement (Deterding et al., 2011). Additionally, Duolingo supports self-directed learning by giving users control over their learning goals, schedules, and pace.

Despite the increasing popularity of Duolingo, there is still limited understanding of its actual effectiveness, especially in the context of Indonesian learners. Some studies suggest that while the app may improve vocabulary and grammar recognition, it lacks sufficient features to develop speaking and interactive communication skills.

This study aims to examine how Duolingo supports self-directed English language learning, particularly in improving vocabulary, grammar, motivation, and consistency. Through a literature review approach, the study explores relevant academic sources to evaluate the advantages and limitations of using Duolingo as a supplementary tool for English learners. The findings are expected to offer insights into the role of mobile learning in enhancing language acquisition and inform educators and learners about its practical applications and challenges.

2. LITERATURE REVIEW

This section discusses relevant theories that serve as the foundation for the study and provides an overview of previous research related to the topic. The theoretical framework of this research is grounded in several key concepts: mobile-assisted language learning (MALL), gamification in education, and self-directed learning.

Mobile-assisted language learning (MALL) emphasizes the use of mobile devices to support flexible, accessible, and autonomous learning experiences. According to Loewen et al. (2020), mobile learning applications can enhance language acquisition by providing repeated exposure, immediate feedback, and interactive content. In the context of English language learning, MALL allows learners to engage with language material anytime and anywhere, promoting consistent practice and learner independence.

Gamification, the integration of game-like elements in non-game settings, is also central to the use of Duolingo. As stated by Santos et al. (2020), gamification increases learner motivation by incorporating rewards, progress bars, and challenges. This aligns with Deci and Ryan's (2000) self-determination theory, which posits that intrinsic motivation can be enhanced when learners feel autonomous, competent, and engaged.

Self-directed learning refers to the ability of individuals to take initiative in planning, executing, and evaluating their own learning. Garrison (1997) emphasizes that self-directed learners are more likely to engage deeply with material and regulate their own progress. Duolingo supports this through personalized goals, reminders, and feedback mechanisms.

Several previous studies have investigated Duolingo's effectiveness. For instance, Vesselinov and Grego (2018) found that Duolingo contributes positively to vocabulary development. Putri and Kurniawan (2022) observed increased learning frequency among Indonesian users, while Ghanbari et al. (2021) identified limitations in speaking practice. These findings provide both the rationale and relevance for conducting this study, which aims to further explore the role of Duolingo in self-directed English learning.

Although this research does not explicitly state a hypothesis, it is grounded in the assumption that mobile applications such as Duolingo can support learners' autonomy, motivation, and language development in significant ways.

3. RESEARCH METHOD

This study employed a qualitative research design using the literature review method to investigate the use of Duolingo as a tool for self-directed English language learning. Data were collected from a range of secondary sources, including peer-reviewed journal articles, conference papers, research reports, and academic publications related to mobile-assisted language learning and educational technology.

The sources were obtained from academic databases such as Google Scholar, ScienceDirect, and ResearchGate, using keywords such as "Duolingo and English learning," "mobile language learning," "self-directed learning," and "gamification in language education." The selection criteria included publications from 2018 to 2024, written in English or Indonesian, and directly relevant to the research topic.

The data were analyzed through content analysis to identify patterns, recurring themes, and major findings related to the impact of Duolingo on vocabulary acquisition, grammar mastery, learning motivation, and learner autonomy. The analysis also focused on identifying the limitations and challenges users face when relying on mobile applications for language learning.

4. RESULT AND DISCUSSION

Key Featurs of Duolingo and Its Impact on Learning

Duolingo is a digital-based language learning app designed with a gamification approach, which makes learning feel like playing a game. The app provides a variety of interactive exercises covering listening, reading, writing, and grammar recognition skills through repetitive and graded practice methods. Each user is given a personalized learning experience based on their previous achievements, with a "level up" system, XP (experience points) scores, and daily "streaks" that motivate regular engagement.

These features are not just visual embellishments, but have a psychological effect on learning motivation. According to Vesselinov and Grego (2018), gamification elements such as points, reward systems and daily challenges have been shown to significantly increase user engagement in the long term. This is in line with the findings of Santos et al. (2020) who stated

that the use of gamification in language learning applications can increase user retention and create a more enjoyable learning experience.

Structurally, Duolingo utilizes modular and microlearning-based learning principles, which allow users to learn in a short but consistent amount of time. For example, in a single learning session of about 5-10 minutes, users can complete a unit of practice with a limited but focused scope, such as the introduction of base form verbs or nouns of everyday objects. This is in line with the concept of chunking in cognitive psychology, where information is delivered in small units for easier processing and recall (Mayer, 2021). Furthermore, the integration of "audio playback", "speaking challenge", and "instant feedback" features makes Duolingo a multimodal learning tool. With instant feedback after answering correctly or incorrectly, users can immediately recognize mistakes and correct them. This feature supports the behaviorism theory of learning, where immediate reinforcement is considered important in forming correct learning habits.

However, the impact of these features in the context of Indonesian users still needs to be investigated further. A study by Putri and Kurniawan (2022) on Indonesian students showed that gamification features in Duolingo were effective in increasing daily study frequency, but did not necessarily have a significant impact on improving TOEFL or IELTS scores. This suggests that while these features can increase engagement, long-term effectiveness is still influenced by external factors such as learning goals, depth of material, and learning environment support.

Thus, Duolingo's features are not only attractive in appearance, but also contain pedagogical elements that are relevant to 21st century learning needs, especially for learners who need flexibility and independent access to English materials. But keep in mind that its effectiveness still depends on how users utilize the feature in a sustainable and purposeful manner.

Learning Independence and Consistency

One of the main advantages of using a mobile application like Duolingo in language learning is its ability to support self-directed learning. Duolingo gives users the freedom to determine the time, place, and duration of learning according to their preferences, without relying on class schedules or direct supervision from teachers. This is an important added value, especially among students who are very busy and have limited access to formal course institutions.

Garrison (1997) states that independent learning is not only related to individual learning, but also emphasizes control over learning goals, processes, and evaluation. In this context, Duolingo provides a framework that supports these elements through a progress tracker, level-based unit, and daily reminder system designed to form consistent learning habits. Users can also view personal learning statistics, such as answer accuracy and weekly study time, which helps them evaluate their progress regularly.

In a study by Loewen et al. (2020), it was found that regular use of Duolingo for eight weeks was able to increase the confidence and learning independence of the study participants, especially in the aspects of vocabulary acquisition and basic sentence structure. This research confirms that the success of independent learning is not only determined by intrinsic motivation, but also by the availability of media that support long-term engagement.

Especially in Indonesia, independent learning through applications such as Duolingo is a relevant alternative solution, especially in areas with limited formal education facilities. A study by Sari and Hidayat (2021) of university students in East Java showed that the majority of respondents felt more motivated to learn English regularly due to the flexibility offered by the app. They also mentioned that the reward system such as "streak" and virtual badges made the learning process feel more fun and less boring.

However, learning consistency is often hampered by external factors such as limited internet quota, lack of time discipline, or unclear learning goals. Without the support of a conducive learning environment, independent learners tend to lose enthusiasm easily, especially if they do not see instant results from their efforts. Therefore, the existence of Duolingo as an independent learning media needs to be balanced with mentoring strategies, both in the form of online learning communities and integration with formal learning activities.

Overall, Duolingo provides a strong foundation for learners to build an independent learning routine. However, long-term success still requires clear planning, specific learning goals, and adequate social support.

Vocabulary and Grammar Improvement

Vocabulary and grammar mastery are two fundamental aspects of English language learning. Duolingo contributes significantly to the development of these two aspects through its context-based learning approach, repetition, and the use of various exercise types (matching, fill-in-the-blank, multiple choice, and dictation). Each learning unit is designed to repeat specific words and structures in various contexts thus strengthening the user's long-term memory.

A study by Butler (2020) showed that regular use of Duolingo for four weeks can significantly improve students' vocabulary acquisition compared to the conventional textbook-based method. This is due to the consistent exposure and use of words in varied sentences, which allows users to understand the meaning of words contextually.

In addition, grammar structures are presented explicitly and implicitly in each practice session. Although Duolingo does not provide in-depth grammatical explanations, users indirectly learn sentence patterns through repeated practice. According to Krashen (1982), the second language acquisition process will be more effective when learners are exposed to comprehensible input, and Duolingo provides this in the form of simple yet meaningful exercises.

In the context of Indonesian users, a study by Yuliani and Suryani (2023) found that students who used Duolingo for six weeks experienced improved understanding of basic grammar such as the use of "to be", "simple present", and "plural forms". They also showed improvement in their ability to translate basic sentences and structure simple sentences correctly.

However, while effective for basic vocabulary and grammar improvement, Duolingo has limitations in providing advanced grammatical material. Materials such as complex sentence structure, passive voice, or conditional sentences are often not explicitly covered. In addition, the app tends to use vocabulary that is general in nature and not always appropriate for academic or professional needs, so users who need technical or specific vocabulary will still need additional learning resources.

Another limitation lies in the speaking skills. Although there is a "speaking practice" feature with voice recognition, it only assesses pronunciation accuracy and does not allow for natural interaction or improvisation as in real conversations. As a result, users lack the spontaneity of verbal communication required in everyday communication situations.

Overall, Duolingo proved useful in strengthening basic vocabulary and grammar acquisition, especially for beginner and intermediate learners. However, to achieve higher and more complete competence, learning with this app should be combined with speaking practice and other additional, more in-depth learning resources.

Limitations and Challenges

While Duolingo provides a range of benefits in supporting self-directed English language learning, it has a number of limitations that need to be considered in order to avoid misunderstanding users' expectations of learning outcomes.

One of the main limitations is the limited development of speaking and social interaction skills. The "speaking" feature in Duolingo only assesses the user's pronunciation of predefined sentences, with no reciprocal interaction or natural response as in a two-way conversation. According to Ghanbari et al. (2021), apps like Duolingo are still ineffective in building spontaneous oral production skills, as they do not provide social context or complex real communication exercises. This is a problem for learners who want to improve their speaking skills for academic or professional situations.

In addition, the material presented tends to be general in nature and does not always match the specific needs of the user. Most of the exercises focus on everyday situations such as ordering food, introducing yourself, or naming objects around you. For users who need language acquisition for academic purposes, such as reading journal articles or writing argumentative essays, the content available on Duolingo is considered too simple (Sampson, 2020).

Another limitation lies in the reliance on extrinsic motivation. Duolingo relies heavily on a system of points, rewards, and daily streaks to maintain user engagement. While this proves effective in the short term, the motivation built tends to be temporary. If users don't have clear learning goals, they are likely to become demoralized when streaks are broken or don't see significant progress quickly. As Deci and Ryan (2000) explain, extrinsic motivation tends to be less enduring than intrinsic motivation that arises from personal awareness and need.

From a technical perspective, the use of this application also requires stable internet access and adequate mobile devices. In some areas in Indonesia, especially in rural areas, limited digital infrastructure is still an obstacle. This hinders learning continuity and reduces the effectiveness of using the app as a primary learning tool.

Lastly, Duolingo is not designed as a comprehensive learning system that can replace the role of teachers, textbooks, or interactions between learners. Therefore, to achieve optimal learning outcomes, the use of Duolingo should be complemented with other learning methods, both formal and informal, as well as engagement in an active learning community.

5. CONCLUSION AND SUGGESTION

The findings of this study indicate that Duolingo plays a significant role in supporting self-directed English language learning. By incorporating gamification elements such as point rewards, progress tracking, and daily challenges, Duolingo effectively enhances learner motivation and helps build consistent learning habits. The application also facilitates the

improvement of vocabulary and basic grammar skills through interactive and repetitive practice. However, the study also found that Duolingo has limitations in developing speaking skills and offering opportunities for real-time interaction, which are essential components of comprehensive language proficiency.

In light of these findings, it is recommended that English language learners use Duolingo as a supplementary tool rather than a sole learning platform. Teachers and educators are encouraged to integrate Duolingo into formal learning environments to promote independent learning habits while still providing opportunities for interactive practice and feedback. App developers are also advised to improve speaking and conversational features to better support communicative competence. Finally, future researchers are suggested to conduct empirical studies that measure the effectiveness of Duolingo through experimental or mixed-method approaches in different learning contexts.

ACKNOWLEDGMENT

REFERENCES

Butler, Y. G. (2020). The effectiveness of self-regulated learning using mobile applications in vocabulary acquisition. Language Learning & Technology, 24(2), 10–29. https://doi.org/10.10125/44783

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining "gamification." In Proceedings of the 15th International Academic MindTrek Conference (pp. 9–15). ACM. https://doi.org/10.1145/2181037.2181040

Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. Adult Education Quarterly, 48(1), 18–33. https://doi.org/10.1177/074171369704800103

Ghanbari, N., Samadi, E., & Rouhi, A. (2021). Speaking skill challenges in language learning apps: A case study of Duolingo. Computer Assisted Language Learning, 34(7), 832–850. https://doi.org/10.1080/09588221.2019.1704785

Krashen, S. D. (1982). Principles and Practice in Second Language Acquisition. Pergamon Press. https://www.sdkrashen.com/content/books/principles_and_practice.pdf

Loewen, S., Isbell, D. R., & Sporn, Z. (2020). The effectiveness of app-based language instruction for developing receptive linguistic knowledge and oral communicative ability. Foreign Language Annals, 53(2), 209–233. https://doi.org/10.1111/flan.12457

Mayer, R. E. (2021). Multimedia learning (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781108858987

Munday, P. (2016). The case for using Duolingo as part of the language classroom experience. RIED. Revista Iberoamericana de Educación a Distancia, 19(1), 83–101. https://doi.org/10.5944/ried.19.1.14581

Putri, F. D., & Kurniawan, D. (2022). Gamification and learning frequency: A study on Indonesian Duolingo users. Journal of Language and Learning Innovation, 5(1), 45–56. https://journal.unnes.ac.id/sju/index.php/jolli/article/view/52249

Rahimi, M., & Yadollahi, S. (2021). Investigating EFL learners' motivation using language apps: A mixed-method study. CALL-EJ, 22(2), 1–17. http://callej.org/journal/22-2/Rahimi-Yadollahi2021.pdf

Rizqi, M. A. (2020). Duolingo in EFL classroom: Benefits and challenges. Lingua Educatia, 2(1), 35–45. https://doi.org/10.22219/lea.v2i1.10789

Sampson, R. J. (2020). The limitations of general language apps for academic English learning. Journal of Applied Language Studies, 14(3), 99–112. https://doi.org/10.47862/jals.14.3.112

Santos, L. M., Araújo, A., & Oliveira, D. (2020). Gamification in mobile apps: Motivation and user engagement in language learning. Interactive Technology and Smart Education, 17(2), 161–178. https://doi.org/10.1108/ITSE-07-2019-0038

Sari, N., & Hidayat, D. (2021). Self-directed language learning using mobile applications among college students in East Java. Indonesian Journal of Educational Technology, 6(2), 78–85. https://journal.unesa.ac.id/index.php/ijet/article/view/11661

Suwartono, T., & Nugroho, H. (2023). Students' perceptions of Duolingo application in learning vocabulary. ELLITE: Journal of English Language, Literature, and Teaching, 8(1), 123–134. https://doi.org/10.31227/osf.io/kwzpn

Thompson, R. L., & Cuesta Medina, L. (2023). Gamification and engagement in mobile learning for EFL learners. Language Learning & Technology, 27(1), 45–67. https://doi.org/10.10125/44789

Vesselinov, R., & Grego, J. (2018). Duolingo effectiveness study. City University of New York. https://www.duolingo.com/efficacy-study

Wang, Y., & Wu, Y. (2019). The impact of mobile applications on vocabulary learning: A meta-analysis. ReCALL, 31(3), 294–311. https://doi.org/10.1017/S0958344019000055

Yuliani, R., & Suryani, N. (2023). Improving grammar and vocabulary mastery using Duolingo among Indonesian EFL learners. Journal of Language and Linguistics Studies, 19(1), 112–125. https://www.jlls.org/index.php/jlls/article/view/4097